Colorado Department
of Public Health
and Environment

March 1, 2005

Mr. Joseph Legare
Director, Project Management Division
U.S. Department of Energy, Rocky Flats Project Office
10808 Highway 93, Unit A
Golden, CO 80403-8200

**RE: Draft Accelerated Action Ecological Screening Evaluation for Industrial Area
Exposure Unit, North Walnut Creek Aquatic Exposure Unit, South Walnut Creek
Aquatic Exposure Unit, Woman Creek Aquatic Exposure Unit, No Name Gulch
Aquatic Exposure Unit, dated February 2005**

Dear Mr. Legare,

EPA and CDPHE (the Agencies) have completed a review of the Draft Accelerated
Action Ecological Screening Evaluation, dated February 2005. The Agencies have
combined the final review comments in the attached document. As indicated in the
attached comments, the Draft document will need to be revised and edited prior to the
determination of whether the ecological chemicals of potential concern (ECOPCs) were
properly selected and can be considered final.

If you have any questions concerning these comments, please contact Robyn Blackburn (EPA) at
303-312-6663 or Tracy Hammon (CDPHE) at 303-692-2693.

Sincerely,

C. Mark Aguilar
Rocky Flats Project Manager
Environmental Protection Agency

Steve Gunderson
RFCA Coordinator
Colorado Department of Public
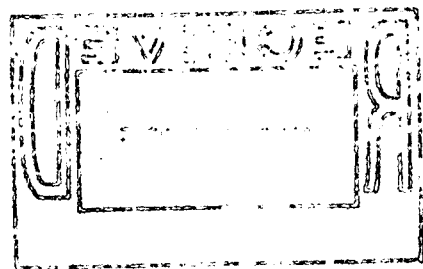Health and Environment

Enclosure

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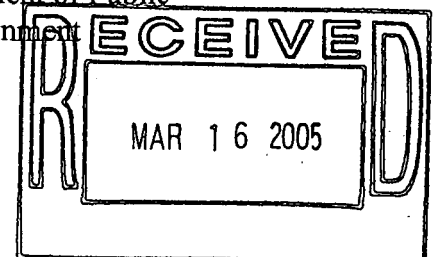
Accelerated Action Ecological Screening Evaluation
for the
Industrial Area Exposure Unit, North Walnut Creek Aquatic Exposure Unit, South Walnut Creek Aquatic Exposure Unit, Woman Creek Aquatic Exposure Unit, No Name Gulch Aquatic Exposure Unit, February 2005

EPA and CDPHE Review Comments

GENERAL COMMENTS

In general, the intention of the document and the data used to conduct the Accelerated Action Ecological Screening Evaluation (AAESE) are not adequately described. Please revise the document to provide a complete description and rationale for conducting the AAESE.

1. **Accelerated Action (AA) vs Comprehensive Risk Assessment (CRA).** The relationship between this report and the ecological risk assessment portion of the CRA is unclear and should be clarified. Although many of the CRA screening components are present, the AAESE document as presented would not satisfy the ecological chemicals of potential concern (ECOPC) Identification Process established in the CRA Methodology. For example, the first step of the ECOPC Selection in the CRA process is to perform a Data Adequacy Assessment/Data Quality Assessment. Without performing this evaluation, it is not clear if the data presented in the AAESE report are adequate for the purposes of ecological risk assessment. Please provide a description of the intention of this document and specify that it is not intended, as is, to serve as the initial step of the CRA process.

   Please note that the Agencies have concern that there is a potential that different ECOPCs will be identified if the data or approach used to identify ECOPC in the AAESE differs from the initial screening to be presented in the CRA. If it is determined that DOE will use different sets of data and not provide the Data Adequacy Assessment/Data Quality Assessment Data, then the Agencies will be limited to approving the ECOPCs that were selected, but it is specifically noted that the approval is only for chemicals that were selected. The final list of ECOPCs will only be given following the process outlined in the CRA Methodology. At a minimum, the AAESE should clearly identify the potential for differing ECOPCs, if appropriate.

2. **Data Used in the AAESE Process.** There is no description of the data used, the quality of the data used, or whether the data are adequate to perform the AAESE ECOPC selection screen. For example, it is not evident if the newly collected Phase I and II data were included in the AAESE database. Please provide a specific description of the data used for this effort and indicate whether the dataset represents pre-removal conditions, post removal conditions, and whether the data reflects the data that will be used for conducting the CRA. In addition, the description should document the criteria used to filter the database such as

post-1991 data only, depth stratification (surface soils = 0-2 ft), removal of R-qualified data, and the specific criteria used to assess whether data were "CRA Ready" (as labeled in the accompanying database submittal).

3. **Calculation of the 95% Upper Confidence Limit on the Mean (UCL).** Several of the minimum detection limits for metals appear to be very low (e.g., Appendix A, Table A-2 reports a minimum cadmium detection limit of 0.00025 mg/kg or 25 ppt). It appears that for several of the Industrial Area (IA) soil samples which were non-detect, the reported DL in the database is the IDL. It is not clear from the database what the units are for the IDL (usually the IDL is reported as ug/L or mg/L). While it may be appropriate to use the IDL for aqueous samples (if it is assumed that the matrix interference is low), it is not appropriate to use the IDL for solid matrix samples. It is recommended that non-detects be evaluated using either one-half the MDL, CRDL, or PQL/SQL (in that order of preference). The detection limit adequacy screen should also focus on either the MDL, CRDL, or PQL/SQL. If this is the instrument detection limit (IDL), rather than the standard detection limit, then consideration should be given to eliminate these values from the UCL calculation. Since non-detects were evaluated at ½ the detection limit in the UCL calculations, the use of an IDL could artificially bias the UCL.

Please also see specific comments for Appendix A regarding the calculation of the UCL. Several of the specific comments may result in the changes to the UCL's as reported.

4. **Data Aggregation within Aquatic Exposure Units.** The five Aquatic Exposure Units (EUs) included for AAESE do not differentiate between the ponds and the drainages within the EU. The approach for aggregating data within the drainage does not seem appropriate since there are a disproportionate number of samples between the drainages and samples available for the ponds. Aggregating the disproportionate data may mask concerns in a specific water body or prematurely eliminate a chemical of concern. It is recommended that the data from the ponds be evaluated independently from the drainages in order to identify whether there are risk drivers within a pond within an EU.

5. **Elimination of Infrequently Detected Chemicals.** The CRA Methodology (Section 7.3, page 82) specifies the components of professional judgment to be considered when excluding chemicals from further evaluation (i.e., rationale for the exclusion of analytes with a detection frequency less than 5%). For the CRA, it will be insufficient to merely exclude these infrequently detected analytes without an evaluation of factors such as spatial distribution, magnitude of exceedance, and process knowledge.

6. **Discrepancies, Omissions, and Errors.** The following comments do not represent a comprehensive list of the many discrepancies and errors that were identified during the review. Rather, the comments document the types of issues that were noted in one or more sections of this report. Therefore, please note that

a comment pertinent to one Exposure Unit (EU) section is likely to be pertinent to all similar EU sections and corrections/revisions should be made accordingly:

7. Please check this entire report to ensure that tables and appendices are properly cited.

8a. The text often refers to tables/appendices incorrectly or refers to tables/appendices which do not exist. Two examples of this issue are provided below:

> Page 8, last paragraph – Table B-1 (Appendix B) is referenced, however, the backgound comparisons are provided in Table A-11 (Appendix A).

> Page 19, second to last sentence – Appendix F is referenced, however, this appendix provides background comparisons for North Walnut Creek not South Walnut Creek. South Walnut Creek data are provided in Appendix C, but no background comparison tables are included in this appendix.

8b. The appendices for several EUs are missing tables for the detection limit adequacy screens and the background comparisons. Two examples of this issue are provided below:

> Appendices A, F, G, H, I are missing the tables with the comparison of detection limits to ESLs.

> Appendices B, C, F, G, H, and I are missing the background comparison and UCL calculation tables.
> Please check each of the appendices to ensure that all of the applicable tables are included.

8c. Please verify that the list of chemicals presented in the in-text tables and summaries for each EU are consistent with the results presented in the corresponding tables and appendices. For example:

> Page 29, Table 1-10, chemicals are presented in this table, but the corresponding appendix (Table E-3) lists 9 chemicals as exceeding an ESL. [It appears that the row for antimony has been excluded from Table E-3.]

8d. The document contains several in-text tables for each EU section that provide lists of chemicals that have been included/excluded at several points throughout the ECOPC screening process. As presented, these tables are confusing to follow and difficult to validate. It is recommended that the in-text tables be replaced with a single table for each EU section which provides a comprehensive summary of the ECOPC process steps and results (see attached example). The supporting tables can remain as provided in the accompanying appendices

8e. Please provide a figure that delineates the Aquatic Exposure Units.

9. The Agencies conducted a review of the data and information provided on CDs. In general, the criteria used and exclusion of results are in accordance with those criteria and appears to be satisfactory. The Agencies would like to further verify the locations of the "NLR" data that were identified and removed from the AAESE data set. Additional details are requested for the process used to eliminate these data. Please see Specific Comment Number 26.

SPECIFIC COMMENTS

1. **Page 2, Accelerated Action Ecological Screening Evaluation, Section I, Subsection a, parts i and ii.** The ECOPC process described is specific to terrestrial vertebrate receptors (deer mouse, prairie dog, kestrel, dove, coyote and deer). There is no mention of the ECOPC process for terrestrial plants and invertebrates and aquatic receptors. Please revise the text and figures to include these receptors.

2. **Page 2, Accelerated Action Ecological Screening Evaluation, Section I, subsection a, part ii.** The text describes two approaches for large home range receptors including maximum detected concentrations in each EU, and maximum site-wide compared to NOAEL ESLs. This would result in two different lists of ECOPCs – one specific to each EU and one specific to the entire site. Please include the specific approach to be used for the AA in the Introduction section of the report.

3. **Page 2, Accelerated Action Ecological Screening Evaluation, Section I, subsection a, parts i and ii.** These sections state that the 95UCL of the 90th percentile (95UTL, small home range) and the 95UCL of the mean (95UCL, large home range) will be compared to the tESL. This section does not document the fact that when the 95UTL or the 95UCL exceeded the maximum, the maximum detect was used in these comparisons. It also does not document how non-detects were evaluated in the calculation of UCLs. Please provide a description of the approach in Introduction.

4. **Page 3, Accelerated Action Ecological Screening Evaluation, Section II, Subsection a, part i.** This section states that only "current" conditions will be assessed, but does not identify what is defined as current (e.g., post building demolition for Industrial Area, pre- or post soil/sediment removals for ponds). Please clarify the assumptions used for the AA.

5. **Page 6, Figure 1 - ECOPC Identification Process.** This flow diagram presents the ECOPC process for non-PMJM terrestrial vertebrate receptors only. This figure should be modified, or an additional flow diagram should be added, to include the ECOPC process for terrestrial plants and invertebrates and aquatic receptors.

6. **Figure 1, First Box.** The definition of "ECOI" is not clear. Please clarify if the ECOI list based on all chemicals that have been analyzed or a list restricted to only those chemicals that have been detected. This should be clearly stated in the text or as a footnote to Figure 1.

7. **Figure 1, Second Box.** The DQA definition, and any difference in the approach for use in the AA verses the CRA should be described in the Introduction. The AA approach should provide rationale for any steps that are not being used for the AA (e.g., detection limit adequacy screen, data adequacy). To avoid discrepancies in the identification of the ECOPCs, it is recommended that data quality and data adequacy are evaluated prior to conducting the AA.

8. **Figure 1, First Diamond, Compare to non-PMJM NOAEL ESLs.** The step does not include comparisons to aquatic receptor ESLs for surface water and sediment or terrestrial plant and invertebrate ESLs. Additionally, there is both a "no" and a "yes" associated with the downward arrow from this diamond.

9. **Figure 1, Second Diamond, Frequency of detection > 5% .** The evaluation associated with this step does not include the required evaluation and rationale for a spatial evaluation of detects or other professional assessments as discussed in the CRA Methodology. These evaluations would need to be included as part of the rationale for exclusion of infrequently detected chemicals. A "yes" should be included on the downward arrow coming from this diamond.

10. **Industrial Area EU – Surface Soil.** The depth of "surface soil" has not been defined.

11. **Table 3.** The table only provides a list of chemicals without terrestrial vertebrate NOAEL ESLs, it does not include a list of chemicals without terrestrial plant or invertebrate ESLs (e.g., fluoride, endosulfan).

12. **Table 7, Boron.** It is not clear how the 95UCL on the mean (3.4 mg/kg) can be lower than the mean (3.7 mg/kg in Table A-2). Please verify the calculation.

13. **Appendix A, Table A-2 and Table A-7.** The agencies were not able to duplicate or verify the datasets summarized in the tables using the Access database provided on CD ROM (SS_IndustrialArea_121504.mdb), even when restricting data to the "CRAReady = 'Yes'" results (as directed in the ReadMe.txt file). For example, a query of the CRAReady surface soil for zinc yields 1631 samples identified as CRAReady = "Yes". However, Table A-2 reports 1620 samples were utilized. Please indicate whether there were additional restrictions placed on the dataset to achieve an N of 1620 (e.g., Sample_Type_Code "EB" were excluded).

14. **Appendix A, Table A-5.** Please add columns which report the actual ESL value for each receptor.

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15. **Appendix A, Table A-11 and Table A-12.** The tables should be restricted to present only those chemicals in soil that have been retained up through the background comparison step in the ECOPC selection process.

> -Please add a footnote to these tables which specify the basis of the reported UCL Value (e.g., the 95UCL on the mean).

> -Please specify the units for the reported concentrations. The column identified a Background % NDs has been left blank.

> -Please interpret the meaning of the red and light green shading (e.g., cells shaded red indicate site significantly higher than bkg at $p < 0.90$).

> -Please verify that the datasets used in the UCL calculations is the same as the dataset used to generate summary statistics (e.g., total number of site samples for benzo(a)pyrene is reported as 343 in Table A-2 and 362 in Table A-12).

> -There are several instances where the maximum detected concentration is much higher than the calculated 95UTL (e.g., tetrachloroethene in subsurface soil – max detect = 27,000,000 and 95UTL = 3.15). This suggests that there may be a units error in the underlying dataset.

16. **North Walnut Creek, South Walnut Creek, Woman Creek, No Name Gulch – Sediment.** The text refers to NOAEL ESLs, but sediment comparisons utilized aquatic receptor-based Sediment ESLs, not wildlife-based NOAEL ESLs.

17. **Page 31, Table 7.** The 95UTL for chrysene (250 ug/kg) is higher than the ESL (240 ug/kg). Please identify chrysene as an ECOPC.

18. A footnote to the data summary statistics tables in the appendices indicates that PCBs were evaluated as Total PCBs, but it appears that PCBs in sediments were evaluated separately (e.g., Aroclor 1260 is identified as a ECOPC for Woman Creek). The approach for evaluating PCBs in sediment should be made consistent with the evaluation used for soil (total PCB=sum of PCB-1260, PCB-1254, etc.).

19. It should be noted that limited or no sediment data were available for several analyte suites. It is not possible to perform an adequate evaluation of risks unless sufficient data are available. Please clearly indicate that this is a data gap to be addressed in the CRA.

20. The text should describe why the same analyte appears more than once in the detection limit adequacy screen (e.g., Table B-4, hexachlrobutadiene appears in 3 rows each with different detection limit ranges).

21. **Table D-5 and Table E-4.** See comments above for Tables A-11 and A-12

>   -A complete description for the nature of the background sediment dataset utilized in the comparison to background should be provided. The description should indicate where the samples were collected and why there are more samples available from background than from the site.
>
>   -the footnote on the bottom of the tables does not appear to be used. Please clarify the interpretation for this footnote.

22. **North Walnut Creek, South Walnut Creek, Woman Creek, No Name Gulch – Surface Water.** The text states that maximum detected concentrations were compared to chronic Ambient Water Quality Criteria (AWQCs), however not all surface water ESLs were based on AWQCs. According to the CRA Workplan and Methodology (Appendix B, Section 3.4) surface water ESLs were based on a hierarchy of several sources.

23. The difference between: Inorganic (T), Inorganic (D), Inorganic soluble (T) and Inorganic soluble (D) should be defined. It is not clear what distinguishes "soluble" from "dissolved". The term "soluble" is often used to describe the aqueous results from a bulk material Toxicity Characteristic Leaching Procedure (TCLP) or Synthetic Precipitation Leaching Procedure (SPLP) analysis. Please ensure that the dataset used in this assessment is representative of surface water.

24. It should be noted that limited or no surface water data were available for several analyte suites. It should be clearly stated that it is not possible to perform an adequate evaluation of risks unless sufficient data are available.

25. The nature of the background surface water dataset utilized in the comparison to background should be described. At a minimum, the location and dates sampled should be provided.

26. **Review of information contained on CD:**

The following is the list of reasons that the Agencies were able to distinguish as result would be identified as "CRAReady = No":

- Result is a surrogate or a tentatively identified chemical (TIC)
- Data collection date is prior to 6/28/1991
- Validation qualifier code indicates rejected data
- Incorrect units (like "%", etc.)
- Start or End Depth is greater than 8 feet for subsurface soil
- Record is a duplicate
- No longer representative (NLR) data
- Data were analyzed with a screening method listed in the Excel spreadsheet "Combined Test Methods for CRA Ranking_082604.xls"(attached)

The last reason listed is not evident. Please provide additional information on the objective for eliminating data based on this criteria. In addition, for each of the above criteria, please identify the acronym utilized in the CRAReasonCode column of the database (e.g., TIC, BU, HD, LND).

Additional information regarding the "NLR.xls" should be provided. For example, there are a series of acronyms that appear in the "CRAReasonCode" column that are not clear and the "Description" column sometimes only provides the individual person who provided the NLR list. In addition, several samples have been removed since they are "probable SS sample, not in aquatic habitat". Please indicate whether this means that the sample results are removed from sediment media, but are used in the surface soil screening. In addition, please provide these samples on a figure for concurrent review by the Agencies.

Editorial

Please verify that all acronyms used in the text, tables, figures, and appendices are included in this list.

Page ii of the Acronym list should only provide one meaning for "NA". If multiple definitions are required, a unique acronym should be identified.

Calculation of 95UCL and 95UTLs. Please add a footnote to the UCL tables that documents the methods utilized to calculate the 95UCL and 95UTL (e.g., 95UCL on the mean calculated using ProUCL v3.0). Please also include a footnote describing how non-detects were evaluated in the 95UCL and 95UTL calculations.

Please add a date to the document cover and title pages.

9/9